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REPORTS, CONCLUSIONS AND RECOMMENDATIONS OF SUBSIDIARY BODIES: ECONOMIC QUESTIONS

Sixth United Nations Regional Cartographic Conference for the Americas

Report of the Secretary-General

SUMMARY

The Sixth United Nations Regional Cartographic Conference for the Americas was convened in accordance with Economic and Social Council decision 1993/225 of 12 July 1993. The Conference provides both a regional and an interregional forum where government officials, planners, scientists and experts from the Americas and other regions address common needs and problems and share experiences relevant to the cartographic and related fields. It was held at United Nations Headquarters in New York from 2 to 6 June 1997.

The desire of member States and other stakeholders to so enhance the relevance of the Conference as to have it meet their expectations at a time of rapid technological and communication changes was fully reflected in the work of the Conference and the resolutions it adopted. Participants also expressed the views that future Conferences should focus more on current and emerging needs and demands at an institutional and a policy level. The Conference therefore underlined the usefulness of convening, within a year, a special

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working group of delegates and experts from all United Nations Regional Cartographic Conferences and the member States of the Economic Commission for Europe to "re-engineer" the work of future regional cartographic conferences, while producing a mission statement for future conferences and identifying strategies and issues of vital importance for respective regions.

The participants, bearing in mind the important contribution made by such regional cartographic conferences to the regional cartographic community, recommended that the Economic and Social Council should convene the Seventh United Nations Regional Cartographic Conference for the Americas early in the year 2001, with a primary focus on the continuing assessment and improvement of the contribution of surveying, mapping and charting in support of economic development, improved social equity and environmental sustainability.

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INTRODUCTION

1. The Sixth United Nations Regional Cartographic Conference for the Americas was held at United Nations Headquarters in New York, from 2 to 6 June 1997. The Conference was held in accordance with Economic and Social Council decision 1993/225 of 12 July 1993. The Conference was attended by 81 representatives and observers from 32 countries,[1] two specialized agencies and four intergovernmental and international scientific organizations.[2] The Conference elected the representative of Mexico as President.

2. The Conference has been recognized as a forum for technical cooperation, technology transfer and programme coordination for the countries of the Americas region, providing government officials, planners, scientists and experts from the Americas and elsewhere with an opportunity to address common needs, problems and experiences in the field of surveying and mapping, cartography, hydrography, remote sensing, and land and geographical information systems, including educational and training aspects, scientific and technological requirements, implementation issues and benefits. The agenda of the Sixth Conference, while fully reflecting that role, also acknowledged how the significant progress made in cartography and related fields had contributed to the reappraisal of goals in the area to meet the challenge of sustainable development of the twenty-first century. Special emphasis was given to the contribution of surveying, mapping and charting to supporting the implementation of Agenda 21[3] and the monitoring of the regional implementation of multinational environmental agreements and other initiatives. The Conference addressed three major substantive topics under three technical committees:

(a) Land resources and environmental management;

(b) Enabling technologies;

(c) Data storage, standardization and presentation.

3. Country reports were covered by a specific item of the agenda, as were the specific reports on the contribution of surveying, mapping and charting to supporting the implementation of Agenda 21. In view of the many dimensions of the contribution of cartography to the implementation of Agenda 21, as well as recent changes in technology and communications making it more feasible for cartography and its related fields to become an essential and integrated tool for sustainable development purposes, some specific issues were addressed in more than one technical committee. Committee I, on land resources and environmental management, was chaired by the representative of Colombia; Committee II, on enabling technologies, was chaired by the representative of Canada; Committee III, on data storage, standardization and presentation, was chaired by the representative of Spain. The Conference adopted 10 draft resolutions, including one vote of thanks.

4. The proceedings of the Conference will be issued in two volumes. Volume I will contain the report of the Conference, including the resolutions adopted. Volume II will contain the technical papers presented at the Conference.

I. FINDINGS

5. Major trends affecting cartography in the Americas region were highlighted through the review of national reports and reports submitted by non-governmental organizations. The themes that recurred in the reports and their presentation acknowledged the role of new technologies introduced in order to generate digital geographical data for improved map production purposes and to feed geographical information systems (GIS) as essential tools for supporting better planning of sustainable development and environmental management. It was recognized that government cartographic agencies were vulnerable to reductions in their resource allocations and that pressures existed to move cartographic activities from the public to the private sector. There is an increased use in the region of satellite imagery and global positioning systems (GPS); geodetic networks are being improved; and there is a continuing need to maintain topographic and thematic mapping and a priority need to produce data and maps in support of cadastre.

6. In addition to national reports, four non-governmental and other organizations submitted papers and made presentations stressing their increasing role in promoting the introduction of new technologies and facilitating exchange of experience and information. It was recognized that, as computer and space technologies allied to advances in telecommunications were leading to better cartographic information, non-governmental organizations had an important role to play in focusing on the issues of relevance to government cartographic agencies. Non-governmental organizations can promote and coordinate activities designed to achieve regional and global solutions, for example, standards for formatting geospatial data.

7. The Conference acknowledged the concerns expressed by several delegations that an insufficient number of national delegations from Latin America and the Caribbean had seen fit to attend the Sixth Conference and that some of the key decision makers and senior government officials had been absent from this important forum. Proposed suggestions were discussed on how to bring future conferences closer to the expectations of member States and encourage a more active participation. Participants at the Conference agreed that, though in future there should still be a regional focus on the Americas, a stronger worldwide representation should also be sought. Future conference agendas should be more responsive to regional needs within the context of an understanding of the globalization of geospatial issues and responses, as much is to be gained by sharing information and opinions with nations from outside the region.

8. In reassessing the mission of the regional cartographic conferences, participants agreed that there was a need to form an inter-sessional working group of experts with the task of producing a mission statement for the next conference . This statement should formulate a strategy for future conferences and define the issues of importance within the region. An important output anticipated from this working group will be the "re-engineering" of the work of the conference to ensure that the vital issues are addressed and that the member States are offered real benefits from their participation. The working group will prepare a refined agenda for the seventh regional conference that should cover institutional as well as technical issues. The Conference endorsed the

proposal, noting also the concerns expressed by the International Civil Aviation Organization (ICAO) that, as common interest extended across regional boundaries, it was important to formulate and develop a common goal and approach for all United Nations regional cartographic conferences.

9. The Conference, through the work of Committee I on land resources and environmental management, acknowledged the contribution of surveying, mapping and charting to supporting the implementation of Agenda 21 and other regional initiatives. Relevant aspects related essentially to cadastral surveying and land reform and to the thematic mapping of natural resources development and the environment. Important issues highlighted by the participants for consideration in cadastral surveying and land management included the recognition that the success of a cadastral system was dependent not only on its legal or technical sophistication, but also on whether it protected land rights adequately, and permitted those rights to be recorded (when appropriate) efficiently, simply, quickly, securely and at low cost. Clear identification and recording of ownership rights, access to land information, rapid processing and up-to-date records maintenance, integration of cadastral and land registry systems, legal reform, quality assurance and risk management were stressed as key cadastral issues.

10. The Conference also recognized the importance of cadastral reform to economic development, social stability and environmental management. Cadastral reform plays an important role in establishing national spatial data infrastructure (NSDI), as topographic and cadastral databases need to be homogeneous and uniformly based on a national geodetic network. Another important issue relevant to cadastral surveying and land management and reform raised by the Conference was the resource implication. The major resource limitations on cadastral reform are human, technological and financial, with human and financial resources tending to be major constraining factors. Alternative and different strategies are thus required to reform cadastral systems and, as the role of the private sector needs to be fully recognized, further search for its greater involvement and participation should be properly investigated.

11. Committee II on enabling technologies addressed issues related to automated mapping projects, specifically the development and application of digital cartographic databases, including digital terrain modelling, and remote sensing in cartography. Among the presentations made by national agencies, specialized agencies and non-governmental organizations, recurrent themes highlighted the impact of the "globalization" of issues and easy access to communication systems, such as the Internet, the development of partnerships and synergy between government and the private sector, and the necessity for harmonization of standards.

12. The role of the geospatial framework was recognized as critical for economic and sustainable development and the integration of the "3S technologies" (remote sensing, GPS and GIS) was seen as essential for efficient management of natural resources. Other technology issues included the use of innovative data visualization techniques along with hypermedia technologies for knowledge-based decision-making, the use of multi-optical

systems and satellite-based technology, as well as current and upcoming high-resolution imagery as a data source for database generation and updating.

13. The work of Committee III on data storage, standardization and presentation covered subject matter areas dealing with GIS, surveying and mapping, geodesy, map updating and generalization, hydrographic surveying and nautical charting, and aeronautical charting. A range of issues were addressed by delegate presentations and follow-up discussions in each area. In the area of GIS, new technologies and methodologies for collecting, maintaining and disseminating data were emphasized. Particular attention was devoted to spatial data infrastructure development on a national, regional and global basis with emphasis on the needs of the Americas. The multi-purpose ground-related information network, a consolidated effort of European mapping agencies to produce multinational data sets, was also reviewed for its potential relevance to the region including its potential economic advantages, as the programme serves as a source of revenue for many of the agencies involved.

14. During the discussion of surveying and mapping, geodesy, map updating and generalization, new technology-based developments in cartography, including a new refined global vertical datum based on the geoid as the zero reference surface for time-invariant altimetry and elevations for more accurate defining of heights and depths, were considered, including enhancements to geodetic reference systems derived from permanent GPS observations and an established collaborative effort to define and maintain a reference system for South America (SIRGAS 95) which will provide a geocentric datum for the continent. Connections with existing networks will be facilitated, providing data for more accurate adjustment so as to support mapping, resource and scientific applications.

15. In reviewing hydrographic surveying and nautical charting, discussion focused on vector- and raster-based nautical charts produced by the United States of America, which presented a paper on the multiple applications of the vector-based digital nautical chart (DNC). Although intended as a navigational tool expressly for naval and merchant vessels, the DNC, with its layered data sets, may serve as a resource for GIS users. DNC coverage will be worldwide. The United States current raster-based system for producing nautical charts of United States waters was presented in detail. The system, which was introduced two years ago, has increased the Government's capacity to produce new editions of its charts and decreased the costs and turnaround time associated with reproduction. A by-product of the production system is a new product line - the raster nautical chart - covering all United States waters and marketed via a partnership with a private United States company. The United States Government is also developing a vector database of selected chart themes that will be gradually incorporated in the raster nautical chart product line. The United States also presented a paper on behalf of the International Hydrographic Bureau, which described the activities of the International Hydrographic Organization (IHO) in the Americas. These activities include technical assistance, training, sponsoring of regional hydrographic commissions, and coordination of the charting of schemes to international standards.

16. During discussion of aeronautical charting, the benefits of integrated GPS and GIS databases as a means of improving aviation safety and of reducing the

costs associated with air traffic management and related functions were reviewed. The representative of ICAO stressed the importance of integrating graphics, such as weather information, airport data and moving maps, with GPS. Emphasis was placed on the need for further standardization of aeronautical data and the need for work on a new vertical datum to provide more accurate definition of vertical obstructions/altitudes.

17. The Conference agreed that a proposal should be drafted to consider how best to implement regional and national spatial data infrastructures in Latin America. With SIRGAS 95, a first solution for the establishment of a unique geocentric geodetic reference system for the region of South America is available. Continued collaboration is encouraged in the development of a geodetic reference system for the region of Latin America. New ways of doing business in areas of mapping and charting are most evident, including the sharing of production responsibilities by users, the dissemination of geospatial information via the Internet, the introduction of cost-recovery demands by national Governments, and the fashioning of partnerships with the private sector in order to sustain or improve development programmes.

18. The role and contribution of IHO were highlighted, as it serves as resource reference in the areas of technical assistance and training related to hydrography, nautical charting and ocean mapping. The Conference also reaffirmed that standardization of aeronautical data was critical to safety of air navigation; in addition, integration of these data with GPS would provide significant benefits in efficiency and cost savings.

19. The deliberations of the three committees confirmed once again how the parallel developments in cartographic and in information technology were rapidly bringing to users cost-effective applications in surveying, charting and mapping as a comprehensive set of the tools and effective approaches required to meet the challenge of sustainable development and the priorities of the countries in the region.

20. A list of 10 resolutions adopted by the Conference and the proposed agenda for the Seventh United Nations Regional Cartographic Conference for the Americas are attached in annex I and annex II, respectively. The activities recommended by the Conference and those required for the preparation of the Seventh United Nations Regional Cartographic Conference for the Americas, deemed to be of a continuous nature, have been included in the medium-term plan under programme 8 for the period 1998-2001 and it is anticipated that they will be incorporated into the proposed programme budget for the biennium 2000-2001. With respect to the latter, inclusion of these activities is not expected to give rise to additional expenditures. In the proposed programme budget for the biennium 1998-1999, these activities, which are of a continuous nature, fall under section 10 (development support and management services). Additional resources need not be sought for these activities in every biennium.

II. RECOMMENDATIONS TO THE ECONOMIC AND SOCIAL COUNCIL

21. In view of the continued and essential contributions made by cartographic technologies and applications in the information stream to policy and decision makers, development planners and the public at large, and by the United Nations Regional Cartographic Conferences for the Americas in strengthening technical cooperation, facilitating the transfer of technology and enhancing programme coordination within the countries of the region, the Conference recommends that the Economic and Social Council:

(a) Endorse its recommendation that the Seventh United Nations Regional Cartographic Conference for the Americas should be convened for five working days no later than early 2001, with a primary focus on the continued and strengthened contribution of surveying, mapping and charting in support of the implementation of Agenda 21 accompanied by provision of policy support to Governments in the region, international organizations and the United Nations to assist in the implementation and assessment of sustainable development and environmental management programmes;

(b) Request the Secretary-General to promote, with the assistance of some member States of the region, an ongoing dialogue between member States and other stakeholders to ensure the implementation of the resolutions of the Sixth United Nations Regional Cartographic Conference for the Americas; in particular, under the guidance of the United Nations Secretariat and within available resources, a special working group of delegates and experts from all United Nations regional cartographic conferences should convene within 12 months in order to (i) re-engineer the work and operation of the Conference to ensure its relevance to regional and global needs while addressing issues of importance to local, national and international users of spatial data and land-related information; (ii) investigate the timing of the United Nations regional cartographic conferences and their being structured to ensure that the conferences for the Africa region, the Asia and Pacific region, and the Americas are repeated over intervals of approximately 12 months, with these conference to be followed by interregional United Nations cartographic conferences for sharing global experiences and for bringing together the resolutions of the regional conferences so as to provide a global perspective in policy- and decision-making for all member States and the United Nations; and (iii) report to the Council within 18 months on the preferred structure.

Notes

[1] Argentina, Belgium, Brazil, Canada, Chile, China, Colombia, Dominican Republic, El Salvador, Fiji, Finland, Germany, Greece, Guatemala, Holy See, Honduras, India, Jamaica, Japan, Kenya, Kyrgyzstan, Malaysia, Mexico, Netherlands, Oman, Portugal, Russian Federation, Spain, Turkey, United Kingdom of Great Britain and Northern Ireland, United States of America, Venezuela.

[2] International Civil Aviation Organization (ICAO), United Nations Centre for Human Settlements (Habitat), International Cartographic Association (ICA), International Federation of Surveyors (FIG), International Society for

Photogrammetry and Remote Sensing (ISPRS), International Union of Geodesy and Geophysics (IUGG).

[3] Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-14 June 1992, vol. I, Resolutions Adopted by the Conference (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex II.

Annex I

RESOLUTIONS ADOPTED BY THE CONFERENCE[a]

1. Seventh United Nations Regional Cartographic Conference for the Americas

2. Establishment of an expert working group to define the mission and focus of the Seventh United Nations Regional Cartographic Conference for the Americas

3. Permanent committee on geographical information systems infrastructure for the Americas

4. Spatial data infrastructure (SDI)

5. The role of the cadastre in spatial data infrastructure

6. Development of the global map

7. Enabling technologies

8. Inter-American biodiversity information network (IABIN)

9. Regional workshops and seminars on the benefits of advanced satellite imaging systems

10. Vote of thanks

Notes

[a] The text of the resolutions will be included in Sixth United Nations Regional Cartographic Conference for the Americas, vol. I, Report of the Conference.

Annex II

PROPOSED PROVISIONAL AGENDA FOR THE SEVENTH UNITED NATIONS REGIONAL CARTOGRAPHIC CONFERENCE FOR THE AMERICAS

1. Opening of the Conference.

2. Election of the President and other officers of the Conference.

3. Objectives of the Conference.

4. Organizational matters:

   (a) Rules of procedure;

   (b) Adoption of the agenda;

   (c) Establishment of committees and election of Chairman and Rapporteurs;

   (d) Organization of work;

   (e) Credentials of representatives to the Conference.

5. Country reports.

6. Reports on the implementation of resolutions of the Sixth United Nations Regional Cartographic Conference for the Americas.

7. Reports on achievements in surveying, mapping, and charting in addressing national, subregional, regional, and global issues, including:

   (a) Policy and institutional issues;

   (b) Technical issues;

   (c) Applications.

8. Review of the achievements of the Conference.

9. Provisional agenda for the Eighth United Nations Regional Cartographic Conference for the Americas.

10. Adoption of resolutions and the report of the Seventh United Nations Regional Cartographic Conference for the Americas.